

39. (New) The calcined tantalum pentoxide powder of claim 20, wherein the packed bulk density is greater than or equal to 3.8 g/cc.

40. (New) The calcined tantalum pentoxide powder of claim 20, wherein said calcined tantalum pentoxide powder has a size such that 70% or less of said powder has a size less than 1 micrometer.

41. (New) The calcined tantalum pentoxide powder of claim 20, wherein said calcined tantalum pentoxide powder has a size greater than 1 micrometer.

42. (New) The calcined tantalum pentoxide powder of claim 20, wherein said calcined tantalum pentoxide powder comprises a fine single crystallite shape.

43. (New) The calcined tantalum pentoxide powder of claim 20, wherein said calcined tantalum pentoxide powder comprises spherical agglomerates.

44. (New) The calcined tantalum pentoxide powder of claim 20 further comprising a fluoride content of less than or equal to 500 ppm.

45. (New) The calcined tantalum pentoxide powder of claim 20 further comprising a fluoride content of less than or equal to 150 ppm.

46. (New) The calcined tantalum pentoxide powder of claim 23, wherein the BET surface area is from 3.0 m<sup>2</sup>/g to 17 m<sup>2</sup>/g.

47. (New) The calcined tantalum pentoxide powder of claim 23, wherein the BET surface area is greater than or equal to 7.0 m<sup>2</sup>/g.

48. (New) The calcined tantalum pentoxide powder of claim 23, wherein the packed bulk density is from 0.9 g/cc to 3.0 g/cc.

49. (New) The calcined tantalum pentoxide powder of claim 23, wherein the packed bulk density is from 1.1 g/cc to 3.0 g/cc.

50. (New) The calcined tantalum pentoxide powder of claim 23, wherein the packed bulk density is less than or equal to 0.75 g/cc.

51. (New) The calcined tantalum pentoxide powder of claim 23, wherein said calcined tantalum pentoxide powder has a size such that 70% or less of said powder has a size less than 1 micrometer.

52. (New) The calcined tantalum pentoxide powder of claim 23, wherein said calcined tantalum pentoxide has a size such that greater than 9% of said calcined tantalum pentoxide powder has a size less than 1 micrometer.